S/N. KARGH8PCTUS

Remarks

Entry of the amendments to the specification, claims, abstract and drawings before examination of the application is respectfully requested.

If there are any questions regarding this Preliminary Amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

Respectfully submitted,

Nils Kreiling

Christopher W. Quinn Reg. No. 38,274 Attorney for Applicant

Date: 9/29

QUINN LAW GROUP, PLLC 39555 Orchard Hill Place, Ste. 520

Novi, Michigan 48375 Phone: 248-380-9300 Fax: 248-380-8968

CONVERTIBLE VEHICLE

CROSS-REFERENCE TO RELATED APPLICATION(S)

This application is a US National Phase of International Application No. PCT/DE 2005/000486, filed March 17th, 2005, which claims priority to German 10 2004 015 665.4, filed March 31st, 2004. The entire contents of the above identified applications are incorporated herein by reference.

TECHNICAL FIELD

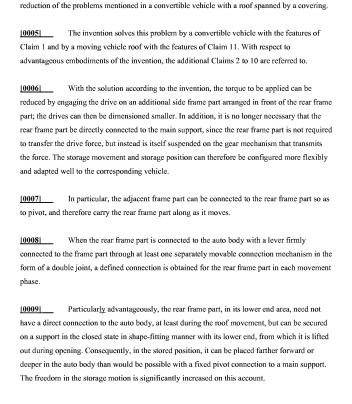
[0001] The invention relates to a convertible vehicle with a roof spanned by a covering according to the preamble of Claim I and an associated vehicle roof.

BACKGROUND OF THE INVENTION

Numerous convertible vehicles are known, which have a flexible roof covering secured on a roof frame, which is stretched in the closed state over lateral frame parts lying along the direction of travel. In this case, not all of the several frame parts to be connected one behind the other in the closed state need to participate in tightening of the covering. Such convertibles are also often referred to as soft tops.

Iomove the roof, it is also known to provide the rear lateral frame parts, with respect to the travel direction, with rigid links, which lengthen the frame parts in the auto body and can be connected to pivot with main supports assigned to the corresponding vehicle sides. Drives can engage with them, in order to cause the roof to move in the opening or closing direction. Since the main supports are situated essentially beneath the rear end of the roof, the drives must be dimensioned sufficiently large to be able to counteract the entire moment of inertia of the roof, which is often provided with a relatively heavy roof peak on its free end facing the windshield frame. In addition, significant constraints that restrict the kinematic motion of the system restricts the configuration possibilities of the designer result for and the resulting design positions of the rear frame part, the connection link and the main support as well as for positions of the drives, because of the motion.

SUMMARY OF THE INVENTION



The invention is based on the problem of achieving a roof connection with

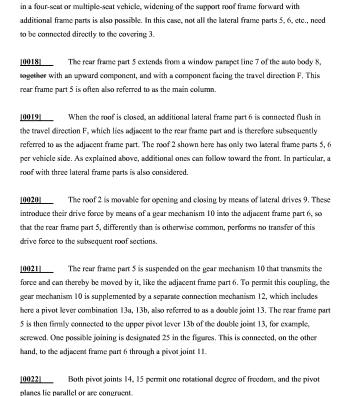
between the drive and the adjacent frame part engaging on the auto body, on one end, and on the
adjacent frame part, on the other end, the linkage that transfers the force can be produced simply
with standard components. Parallel storage of the adjacent frame part so secured is also possible,
which is desired, for example, when only two lateral frame parts are present and this forms part
of the roof peak.
[0011] Additional advantages and features of the invention can be seen from an
embodiment example, schematically depicted in the drawing and described below, of the object
of the invention.
BRIEF DESCRIPTION OF THE DRAWINGS
[0012] In the drawings:
[0013] Fig. 1 shows a middle area of a convertible vehicle according to the invention in
a schematic view, partially broken down, with a fully closed roof,
[0014] Fig. 2 shows a schematic view of the roof motion in the closed and open roof
positions, without the roof covering being shown.
DESCRIPTION OF THE PREFERRED EMBODIMENTS
[0015] The convertible vehicle 1 according to the invention can be both a two-seater and
a convertible vehicle with a larger internal compartment and two rows of seats, one behind the
other.

If a multiple linkage, especially a four-link suspension, is used for force transfer

It includes a movable roof 2, which has at least one flexible roof covering 3, which extends, in the embodiment example shown, over the entire movable roof 2. A flexible and therefore foldable rear window 4 can be included in the covering 3. It can also be designed

[0016]

rigid and consist, for example, of plastic or glass.



The roof covering 3 is at least partially secured on two lateral frame parts 5, 6 that

follow each other in the longitudinal direction of the vehicle when the roof is closed. Especially

is secured in a support receptacle 17 when the roof 2 is closed, from which it is lifted out,
however, during roof opening. The lower end 16 can therefore be stored in optimized fashion in
the body during roof storage, without having to consider a lengthening of the links leading to the
main support. During the opening and closing movement of roof 2, the lower end 16 is only
connected to the body 8 through the connection mechanism 12 and the adjacent frame part 6.
[0024] The gear mechanism 10 extends from the body 8 close to the window parapet line
7 to the adjacent frame part 6 and has two almost parallel levers 47 27, 18 in the embodiment
example, which are connected so as to move in the lower area on pivot supports 19, 20 attached
to the body and in the upper area on the adjacent frame part 6 by means of pivot joints 21, 22.
The gear mechanism 10 therefore forms, with these pivot supports and joints 19, 20, 21, 22, a
four-link suspension. Instead of the four-link suspension 19, 20, 21, 22, other multiple joints are
also possible, possibly with link guides. The joints 21, 22 can be arranged, as here, on a rear-
facing outrigger 23 of the adjacent frame part 6.
[0025] To open the roof 2, the links levers 17, 18 are pivoted by drive 9 in the direction
of arrow 24 about the links pivot supports 19, 20 attached to the body.
[0026] The roof 2 is then raised slightly, so that the rear frame part 5, with its lower end
6, is lifted out of the body support receptacle 17. The lower end 16 is therefore a free end of the
rear frame part 5. As shown in Fig. 2 with the stored position of the frame parts 5, 6, it can
therefore be positioned far to the front and independently of the position of a main support in
vehicle 1. Because of this, the existing space can be optimally utilized and the trunk space is

On its lower end 16, the rear frame part 5 has no permanent body connection, but

[0023]

increased.

[0027]

rear frame part 5 to the body 8, a defined movement is obtained by means of the double joint 13.

During opening, despite the absence of a connection to the lower end 16 of the

[0028] The invention is applicable, in vehicles both with a roof to be moved manually and with fully or partly automatic mobility of the roof 2.

[0029] While the best modes for carrying out the invention have been described in detail, those familiar with the art to which this invention relates will recognize various alternative designs and embodiments for practicing the invention within the scope of the appended claims.

Claims:

1. A convertible vehicle (1) with a roof (2) having a roof covering (3) eomprising and several lateral frame parts (5; 6; ...), which at least partially span the roof covering (3) when the roof (2) is closed and follow each other in the longitudinal direction of the vehicle, in which a rear frame part (5) extends from a window parapet line (7) with an upward faeine extending component.

5

10

- characterized in that the adjacent frame part (6), following preceding the rear frame part (5) in the direction of travel (F) when roof 2 is closed, can be moved without a force transfer through the rear frame part (5) by at least one drive (9) provided for roof opening, and the rear frame part (5) is suspended on a gear mechanism that transfers the drive force and can be moved by it.
- A convertible vehicle (1) according to Claim 1,
 characterized in that the adjacent frame part (6) is connected so as to a
 pivot joint (11) along with the rear frame part (5).
- A convertible vehicle (1) according to one of the Claims 1 or 2 Claim 1, characterized in that the rear frame part (5) is connected to body (8) through at least one separate movable connection mechanism (12).
- A convertible vehicle (1) according to Claim 3,
 characterized in that the connection mechanism (12) includes two levers (13a; 13b) forming a double joint (13) and connected to each other on a pivot joint (14).
- A convertible vehicle (1) according to Claim 4,
 characterized in that the rear frame part (5) is firmly connected to a lever (13b) of the double joint (13).
- A convertible vehicle (1) according to one of the Claims 1 to 5Claim 1, characterized in that the rear frame part (5), in its lower end area (16), has no direct body connection, at least during roof movement.

- 7. A convertible vehicle (1) according to one of Claims 1 through 6Claim 1, characterized in that to transfer force between drive (9) and adjacent frame part (6), a multiple joint (10)[[.]] engaging on a vehicle body (8) on one end and on an adjacent frame part (6) on the other end, is used.
- A convertible vehicle (1) according to Claim 7,
 characterized in that the multiple joint (10) is a four-link pivot joint suspension (19; 20; 21, 22).
- A convertible vehicle (1) according to Claim 8,
 characterized in that the multiple four pivot joint suspension (19; 20; 21;
 includes two links (47 27; 18) mounted on body (8) and extending upward to adjacent frame part (6) and connected so as to pivot there.
- A movable vehicle roof for a convertible vehicle according to one of the Claims 1 to 9Claim 1.

CONVERTIBLE VEHICLE

ABSTRACT OF THE INVENTION

A convertible vehicle with a roof having a roof covering and several lateral frame parts, which at least partially span the roof covering when roof is closed and follow each other in the longitudinal direction of the vehicle, in which a rear frame part extends from a window parapet line with an upward extending component. The adjacent frame part, preceding the rear frame part in the direction of travel when the roof is closed, can be moved without a force transfer through the rear frame part by at least one drive provided for roof opening, and the rear frame part is suspended on a gear mechanism that transfers the drive force and can be moved by it.